What is claimed is:

1. A method of joining plastics comprising:

a) creating a first surface diffusion zone containing therein a first polymerizable material, wherein said first surface diffusion zone is adjacent to a first surface of a first workpiece; and,

b) creating a second surface diffusion zone containing therein a second polymerizable material, wherein said second surface diffusion zone is adjacent to a second surface of a second workpiece, and wherein said first polymerizable material and said second polymerizable material are capable of bonding with each other; and,

c) bringing said first surface and said second surface into intimate contact at a bonding surface; and,

d) causing said first polymerizable material and said second polymerizable material to react and join across said bonding surface.

2. A method of joining plastics as in claim 1 wherein at least one of said first surface or said second surface has at least one microfeature therein.

3. A method of joining plastics as in claim 1 wherein at least one of said first workpiece or said second workpiece is a high-performance engineered plastic.

4. A method of joining plastics as in claim 3 wherein at least one of said first workpiece or said second workpiece

is selected from the group consisting of polyetherimides, polyphenylenes, and polyether-ether-ketones.

5. A method of joining plastics as in claim 4 wherein said first workpiece and said second workpiece are polyphenylenes and said first polymerizable material and second polymerizable material are mixtures of styrene and divinylbenzene.

6. A method of joining plastics as in claim 5 wherein both of said mixtures have a ratio of approximately 9:1 by volume of styrene to divinylbenzene.

7. A method of joining plastics comprising:

a) creating a first surface diffusion zone containing therein a polymerizable material, wherein said first surface diffusion zone is adjacent to a first joining surface of a first workpiece; and,

b) providing a second workpiece having a second joining surface; and,

c) bringing said first joining surface and said second joining surface into intimate contact at a bonding surface; and,

d) causing said polymerizable material to react and join across said bonding surface.

8. A method of joining plastics as in claim 7 wherein at least one of said first joining surface or said second joining surface has at least one microfeature therein.

9. A method of joining plastics as in claim 7 wherein at least one of said first workpiece or said second workpiece is a high-performance engineered plastic.

10. A method of joining plastics as in claim 9 wherein at least one of said first workpiece or said second workpiece is selected from the group consisting of polyetherimides, polyphenylenes, and polyether-ether-ketones.

11. A method of joining plastics as in claim 10 wherein said first workpiece is a polyphenylene, said second workpiece is a polyetherimide and said polymerizable material is styrene.

12. A material comprising a plastic workpiece in combination with a polymerizable material wherein said polymerizable material is located in a surface diffusion zone adjacent to a surface of said plastic workpiece.

13. A material as in claim 12 wherein said surface of said plastic workpiece has at least one microfeature therein.

14. A material as in claim 12 wherein said plastic workpiece is a high-performance engineered plastic.

15. A material as in claim 14 wherein said plastic workpiece is selected from the group consisting of polyetherimides, polyphenylenes, and polyether-ether-ketones.

16. A material as in claim 15 wherein said workpiece is a polyphenylene and said polymerizable material is selected from the group consisting of styrene and mixtures of styrene and divinylbenzene.

17. A microfluidic device comprising at least one high-performance engineered plastic component joined by the method of claim 1.

18. A microfluidic device as in claim 17 wherein at least one of said high-performance engineered plastic components is selected from the group consisting of polyetherimides, polyphenylenes, and polyether-ether-ketones.

19. A microfluidic device as in claim 18 wherein at least one of said high-performance engineered plastic component is a polyphenylene.

20. A microfluidic device comprising at least one high-performance engineered plastic component joined by the method of claim 7.

21. A microfluidic device as in claim 20 wherein at least one of said high-performance engineered plastic components is selected from the group consisting of polyetherimides, polyphenylenes, and polyether-ether-ketones.